

SECTION

3

Reinforcement

Metamorphic Rocks

Directions: Complete the concept map using the terms below.

metamorphic rocks

marble

gneiss

foliated rocks

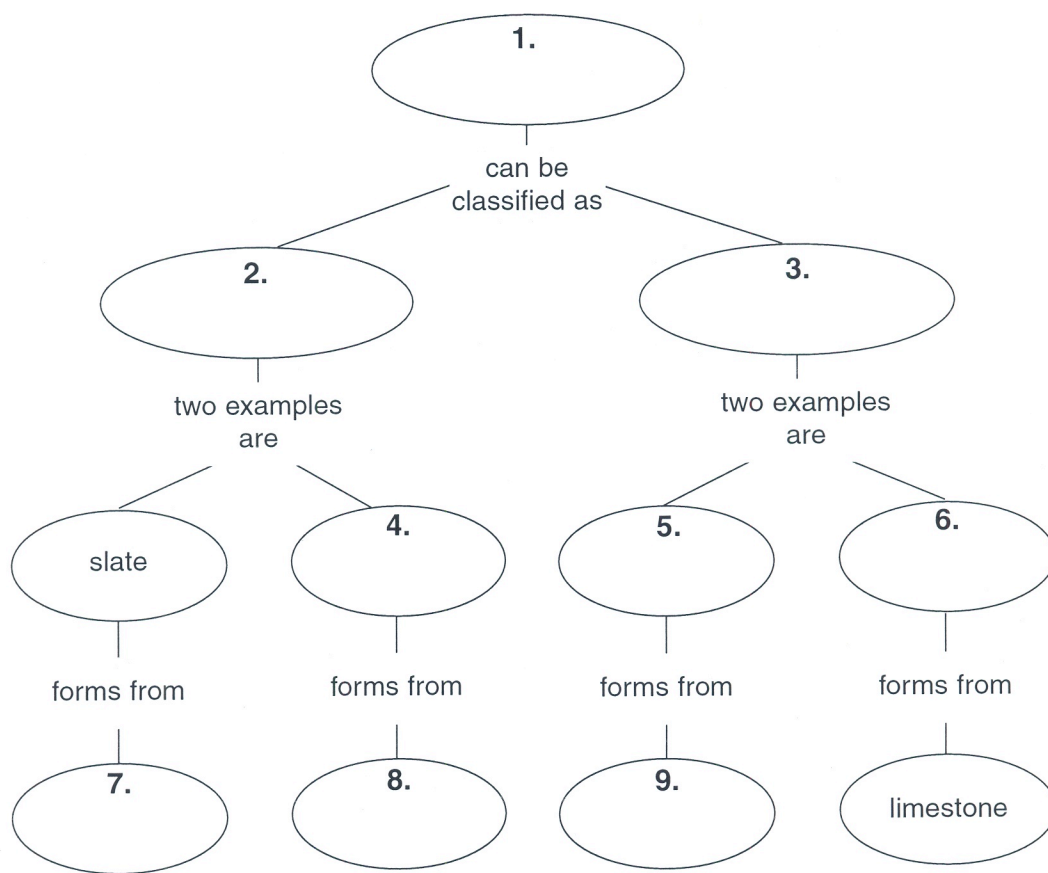
quartzite

shale

nonfoliated rocks

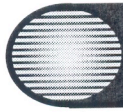
sandstone

granite



Directions: Write **T** if the statement is true. Write **F** if the statement is false.

- _____ 10. Metamorphic rocks form only from igneous rocks.
- _____ 11. An igneous rock like granite can be formed into a metamorphic rock like gneiss.
- _____ 12. Heat and pressure have no effect on rocks.
- _____ 13. One type of rock, such as shale, can change into several different kinds of metamorphic rock.

**Directed Reading for
Content Mastery****Section 3 ■ Metamorphic Rocks
Section 4 ■ Sedimentary Rocks**

Directions: Draw a line from the description on the left to the correct term on the right.

- | | |
|---|-----------------------|
| 1. a type of metamorphic rock in which mineral grains grow and rearrange but do not form layers | metamorphic rocks |
| 2. a type of organic sedimentary rock formed from the pieces of dead plants | foliated rock |
| 3. rocks formed by changes in temperature and pressure or the presence of hot, watery fluids | coal |
| 4. sedimentary rocks such as halite that are formed when minerals come out of solution | nonfoliated rock |
| 5. sedimentary rocks such as sandstone that are formed from broken fragments of other rocks | chalk |
| 6. a type of organic sedimentary rock made of the mineral calcite and formed largely from the shells of ocean animals | detrital rocks |
| 7. rocks formed when sediments are pressed and cemented together or when minerals form from solutions | chemical rocks |
| 8. a type of metamorphic rock in which mineral grains flatten and line up in parallel layers | stacked rocks |
| 9. sedimentary rock in which the older rocks, unless disrupted, are on the bottom | sedimentary rocks |
| 10. an organic sedimentary rock made of microscopic shells | fossil-rich limestone |

SECTION 6.3 Metamorphic Rocks

In your textbook, read about metamorphic rocks.

For each item in Column A, write the letter of the matching item in Column B.

Column A

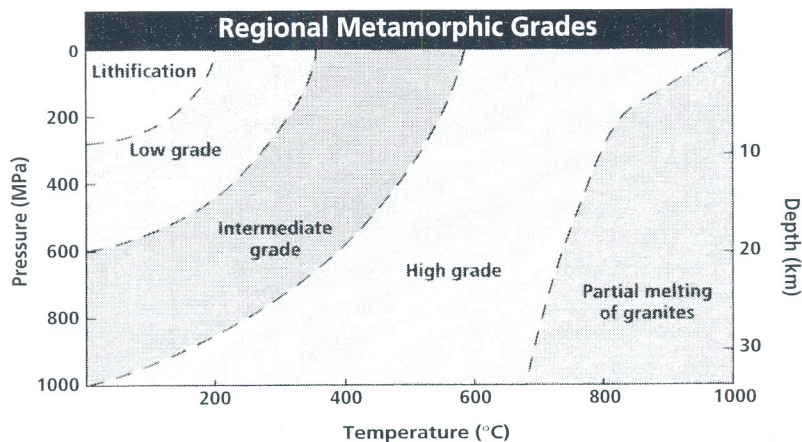
- _____ 1. Occurs when rocks come into contact with molten rock
- _____ 2. Rock whose texture, mineralogy, or chemical composition has been altered without melting it
- _____ 3. Metamorphism resulting from high temperature and pressure that affects a large region
- _____ 4. Large crystals of new metamorphic minerals
- _____ 5. Occurs when very hot water reacts with rock
- _____ 6. Characterized by wavy layers and bands of light and dark minerals
- _____ 7. Composed mainly of minerals with blocky crystal shapes

Column B

- a. contact metamorphism
- b. foliated metamorphic rock
- c. nonfoliated metamorphic rock
- d. metamorphic rock
- e. hydrothermal metamorphism
- f. porphyroblasts
- g. regional metamorphism

In your textbook, read about types of metamorphism.

Use the diagram to answer the following questions.



8. What grades of regional metamorphism are shown on the graph?

9. Which grades represent the highest pressure conditions?

10. Which grade generally occurs between 0 and 20 km below Earth's surface?

SECTION 6.3 Metamorphic Rocks, continued

In your textbook, read about causes and types of metamorphism.

Circle the letter of the choice that best completes the statement.

- 11.** The pressure required for metamorphism can be generated by
a. pressure from weight of overlying rock.
b. heat from magma bodies in contact with surrounding rock.
c. cementation and lithification.
d. hydrothermal solutions.
- 12.** A regional metamorphic belt is divided into zones based upon
a. the number of volcanoes in the area. **c.** types of fossils found in the rocks.
b. mineral groups found in the rocks. **d.** current underground temperatures.
- 13.** Contact metamorphism occurs under conditions of
a. high temperature and high pressure.
b. high temperature and moderate-to-low pressure.
c. low temperature and very high pressure.
d. low temperature and moderate-to-low pressure.
- 14.** Minerals that crystallize at higher temperatures as a result of contact metamorphism tend to be found near
a. coal deposits. **b.** bodies of water. **c.** coral reefs. **d.** igneous intrusions.
- 15.** The type of metamorphism that occurs when very hot water reacts with and alters the mineralogy of rock is
a. contact. **b.** regional. **c.** hydrothermal. **d.** local.
- 16.** Metamorphic rocks in which the long axes of their minerals are perpendicular to the pressure that altered them are described as
a. marble-like. **b.** quartzite-like. **c.** foliated. **d.** nonfoliated.
- 17.** Metamorphic rocks that lack mineral grains with long axes oriented in one direction are described as
a. marble-like. **b.** quartzite-like. **c.** foliated. **d.** nonfoliated.
- 18.** Porphyroblasts differ from the minerals surrounding them in terms of
a. size. **b.** color. **c.** axis of orientation. **d.** shape.
- 19.** Hot fluids migrating into and out of a rock during metamorphism can change the rock's
a. chemistry. **c.** grade.
b. energy. **d.** fossil content.